



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/709,010 | 04/07/2004 | Matthew J. Murray | U03-0134.65 | 3009 |
| 54494 | 7590 | 09/21/2007 | EXAMINER | |
| MOORE AND VAN ALLEN PLLC FOR SEMC P.O. BOX 13706 430 DAVIS DRIVE, SUITE 500 RESEARCH TRIANGLE PARK, NC 27709 | | | LE, HUYEN D | |
| | | ART UNIT | PAPER NUMBER | |
| | | 2615 | | |
| | | MAIL DATE | DELIVERY MODE | |
| | | 09/21/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/709,010 | MURRAY, MATTHEW J. | |
| | Examiner | Art Unit | |
| | HUYEN D. LE | 2615 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 22 January 2007.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-33 and 37-40 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 4,5,10,19,27,37,38 and 40 is/are allowed.
 6) Claim(s) 1-3,6-9,11-18,20-26,28-33 and 39 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Steere et al. (US 2005/0157904).

Regarding claims 1 and 11, Steere et al. teach a method and apparatus of a transducer assembly (100, 800) that comprises a transducer (106, 202, 804, 812) adapted to excite bending waves in an acoustic radiator (104, 806) to produce an acoustic output, and a coupler (814) including rheological material (see paragraph [0054]).

As shown in figures 8, 8A and 8B, the coupler (814) is mounted to the transducer (804) and is adapted to be attached to the acoustic radiator (806) to transmit bending wave energy from the transducer through the coupler (814) to the acoustic transducer as claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-3, 6, 8, 12, 18, 21-23, 26 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steere et al. (US 2005/0157904) in view of Murray (U.S. patent 6,434,237).

Regarding claims 28 and 29, Steere et al. teach a method and apparatus of a transducer assembly (100, 800) that comprises a transducer (106, 202, 804, 812) to excite bending waves in an acoustic radiator (104, 806) to produce an acoustic output, and a coupler (814) including rheological material. As shown in figures 8, 8A and 8B, the coupler (814) is mounted to the transducer (804) and is adapted to be attached to the acoustic radiator (806) to transmit bending wave energy from the transducer through the coupler (814) to the acoustic transducer as claimed.

Regarding claims 2-3, 6, 12, 21-23 and 28-32, Steere et al. teach the electromagnet (804, 812) for generating a magnetic field and the rheological material (814) that is magneto-rheological fluid. Steere et al. do not teach that the rheological material (814) has a controllable viscosity. However, providing the rheological material having a controllable viscosity is known in the art.

Murray teaches a rheological material (28) that has a controllable viscosity in response to the magnetic field for changing the ability of the magneto-rheological fluid to flow (col. 3, lines 27-56).

Therefore, it would have been obvious to one skilled in the art to provide the magneto-rheological fluid, as taught by Murray, in the Steere speaker for better controlling the viscosity of the fluid. This would provide a better damping force in the system.

Regarding claims 8, 18 and 26, Steere et al. do not specifically teach the rheological material (814) that includes foam as claimed. However, providing a rheological material including foam impregnated with a rheological material is known in the art.

Murray teaches rheological material (28) that includes foam impregnated with a rheological fluid (col. 4, lines 5-6).

Therefore, it would have been obvious to one skilled in the art to provide any type of rheological material such as the material that includes foam impregnated with a rheological material, as taught by Murray, for providing a better damping member in the speaker.

Regarding claim 33, Steere et al. do not teach the transducer assembly that is disposed in a mobile terminal as claimed. However, providing a transducer assembly in a mobile terminal is known in the art.

Therefore, it would have been obvious to one skilled in the art to provide the transducer assembly of Steere in any communication device such as a mobile terminal for greater application. Further, it is obvious that the transducer of Steere in view of Murray generates an energy field when the mobile terminal is on a call and reduces the strength of energy field when the mobile terminal is not on a call depending on the frequency signals that are applied to the voice coil in the speaker.

5. Claims 7, 9, 13-17, 20, 24-25 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steere et al. (US 2005/0157904).

Regarding claims 7, 17 and 25, Steere et al. does not teach that the transducer (100, 800) for the radiator includes a piezoelectric element. However, providing a driver for a speaker including an electromagnetic or a piezoelectric driver is known in the art (also see figures 9, 10).

Therefore, it would have been obvious to one skilled in the art to provide any type of transducers or drivers such as a piezoelectric driver for the radiator (104, 806) of the Steere speaker depending on the applications that are required a small size for the speaker.

Regarding claim 9, Steere et al. do not specifically teach a closed vessel including a compliant body as claimed. However, Steere et al. do not restrict the amount of the damping of the magneto-rheological fluid.

Therefore, it would have been obvious to one skilled in the art to provide a closed vessel including a compliant body for containing the rheological material of the Steere speaker for better controlling the damping force for the system.

Regarding claims 13-16, 20, 24 and 39, Steere et al. do not specifically teach that the acoustic radiator is at least in part transparent and includes a display or liquid crystal display as claimed. However, providing an acoustic radiator for the display window is known in the art.

Therefore, it would have been obvious to one skilled in the art to provide the acoustic radiator of Steere to be used as a display window in any communication device such as a mobile phone that is made of transparent material for greater application.

Allowable Subject Matter

6. Claims 4-5, 10, 19, 27, 37-38 and 40 have been allowed.

Response to Arguments

7. Applicant's arguments with respect to claims 1-3, 6-9, 11-18, 20-26, 28-33 and 39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN D. LE whose telephone number is (571) 272-7502. The examiner can normally be reached on 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SINH TRAN can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


HL
September 15, 2007


HUYEN LE
PRIMARY EXAMINER